

Attorney Docket No. **IMMR-055/01US****PATENT****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**In re application of James F. KRAMER *et al.*

Examiner: Unassigned

Serial No.: 10/801,643

Art Unit: 2123

Filed: March 17, 2004

Confirmation No.: 1680

**For: SYSTEM AND METHOD FOR CONSTRAINING A GRAPHICAL HAND FROM
PENETRATING SIMULATED GRAPHICAL OBJECTS**

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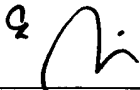
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Dated: September 14, 2004

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(1 of 2)

PTO/SB/08A (10-01)

Approved for use through 10/31/2002. OMB 0651-0031

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|------------------------|-----------------|
| Application Number | 10/801,643 |
| Filing Date | March 17, 2004 |
| First Named Inventor | James F. Kramer |
| Art Unit | 2123 |
| Examiner Name | Unassigned |
| Attorney Docket Number | IMMR-055/01US |

U.S. PATENT DOCUMENTS

| Examiner | Cite No. ¹ | Document Number Number Kind Code ² (if known) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|----------|-----------------------|---|--------------------------------|--|---|
| | | 6,422,941 | 7/23/2002 | Thorner et al. | |
| | | 6,160,489 | 12/12/2000 | Perry et al. | |
| | | 5,690,582 | 11/25/1997 | Ulrich et al. | |
| | | 5,575,761 | 11/19/1996 | Hajianpour | |
| | | 5,437,607 | 8/1/1995 | Taylor | |
| | | 5,436,622 | 7/25/1995 | Gutman et al. | |
| | | 5,283,970 | 2/8/1994 | Aigner | |
| | | 5,186,695 | 2/16/1993 | Mangseth et al. | |
| | | 5,175,459 | 12/29/1992 | Danial et al. | |
| | | 5,165,897 | 11/24/1992 | Johnson | |
| | | 5,022,384 | 6/11/1991 | Freels | |
| | | 4,885,565 | 12/5/1989 | Embach | |
| | | 4,484,191 | 11/20/1984 | Vavra | |
| | | 4,464,117 | 8/7/1984 | Foerst | |
| | | 4,333,070 | 6/1/1982 | Barnes | |
| | | 4,262,549 | 4/21/1981 | Schwellenbach | |
| | | 4,127,752 | 11/28/1978 | Lowthorp | |
| | | 2,972,140 | 2/14/1961 | Hirsch | |

| Examiner Initials* | Cite No. ¹ | Foreign Patent Document | | | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|-----------------------|--------------------------|---------------------------|---------------------|-----------------------------------|--------------------------------|---|--|
| | | Country Code ³ | Number ⁴ | Kind Code ⁵ (if known) | | | |
| | | JP | H2-185278 | | 7/19/1990 | Taito Corporation | |
| | | JP | H4-8381 | | 1/13/1992 | Epoch Co. and Key- Planning Co. | |
| | | JP | H7-24147 | | 1/27/1995 | Sega Corporation | |
| | | JP | H5-192449 | | 8/3/1993 | Taito Corporation | |

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| Examiner Name | Unassigned |
| Attorney Docket Number | IMMR-055/01US |

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

| Examiner Initials * | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
|------------------------|--------------------------|--|
| | | PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for Interaction with Virtual and Remote Environments," <i>Master of Science Thesis</i> , MIT, Aug. 1990, archived Nov. 8, 1990. |
| | | CALDER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," <i>Bachelor of Science Thesis</i> , MIT, May 1983, archived June 23, 1983. |
| | | WIKER, "Teletouch Display Development: Phase 1 Report," <i>Technical Report 1230</i> , Naval Ocean Systems Center, San Diego, July 1988. |
| | | BLISS, "Optical-to-Tactile Image Conversion for the Blind," <i>IEEE Transactions on Man-Machine Systems</i> , Vol. MMS-11, No. 1, March 1970. |
| | | JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," <i>Armstrong Aerospace Medical Research Laboratory</i> , AAMRL-TR-90-039, August, 1990. |
| | | KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," <i>PRESENCE</i> , 4(4):387-402, Harvard Univ., 1995. |
| | | AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992. |
| | | EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, <i>Dynamic Systems and Control: Volume 1</i> , ASME 1994. |
| | | GOBEL et al., "Tactile Feedback Applied to Computer Mice," <i>International Journal of Human-Computer Interaction</i> , Vol. 7, No. 1, pp. 1-24, 1995. |
| | | PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 nd Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994. |
| | | "Cyberman Technical Specification," <i>Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide</i> , 4/5/1994. |
| | | OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," <i>Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95</i> , Seoul, Korea, 21-24 August 1995. |
| | | KACZMAREK et al., "Tactile Displays," <i>Virtual Environment Technologies</i> , Chap. 9, pp. 349-414. |
| | | LAKE, "Cyberman from Logitech," at http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html , 1994. |

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SignatureDate
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|------------------------|--------------------------|---|--|
| | | "Component Maintenance Manual With Illustrated Parts List, Coaxial Control Shaker Part no. C-25502," Safe Flight Instrument Corporation, Revised 28 January 2002 (3 pages). | |
| | | "Technical Manual Overhaul Instructions With Parts Breakdown, Coaxial Control Shaker Part no. C-25502," Safe Flight Instrument Corporation, Revised 15 July 1980 (23 pages). | |
| | | SCANNELL, "Taking a Joystick Ride," <i>Computer Currents</i> , Boston Edition, Vol. 9, No. 11, November 1994 | |
| | | YAMAKITA et al., "Tele-Virtual Reality of Dynamic Mechanical Model," <i>Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems</i> , Raleigh, NC, July 7-10, 1992 | |
| | | NOLL, "Man-Machine Tactile," <i>SID Journal</i> , July/August 1972 Issue. | |
| | | ROSENBERG, "Virtual Fixtures: Perceptual Overlays Enhance Operator Performance In Telepresence Tasks," <i>Ph.D. Dissertation</i> , Stanford University, June 1994. | |
| | | ZILLES, "A Constraint-Based God-Object Method for Haptic Display," Department of Mechanical Engineering, Artificial Intelligence Laboratory, Massachusetts Institute of Technology, undated. | |

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|----------|-----------------------|--|--------------------------------|--|---|
| | | Number Kind Code ² (if known) | | | |
| | | US2003/0048312 | 3/2003 | Zimmerman et al | |
| | | 5,047,952 | 9/1991 | Kramer et al | |
| | | 5,184,319 | 2/1993 | Kramer | |
| | | 5,562,707 | 10/1996 | Prochazka et al | |
| | | 5,563,632 | 10/1996 | Roberts | |
| | | 5,587,937 | 12/1996 | Massie et al | |
| | | 5,631,861 | 05/1997 | Kramer | |
| | | 5,676,157 | 10/1997 | Kramer | |
| | | 5,803,738 | 09/1998 | Latham | |
| | | 6,424,333 | 07/2002 | Tremblay et al | |

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